

REMARKS

The Office Action dated December 15, 2005, has been received and reviewed.

Claims 25-32 and 64-66 are currently pending and under consideration in the above-referenced application, each standing rejected.

Reconsideration of the above-referenced application is respectfully requested.

Supplemental Information Disclosure Statement

Please note that a Supplemental Information Disclosure Statement was filed in the above-referenced application on May 19, 2005, but that the undersigned attorney has not yet received any indication that the references cited in the Supplemental Information Disclosure Statement have been considered in the above-referenced application. It is respectfully requested that the references cited in the Supplemental Information Disclosure Statement of May 19, 2005, be considered and made of record in the above-referenced application and that an initialed copy of the Form PTO/SB/08A that accompanied that Supplemental Information Disclosure Statement be returned to the undersigned attorney as evidence of such consideration.

Rejections under 35 U.S.C. § 112, First Paragraph

Claims 25-32 have been rejected for reciting subject matter that purportedly does not comply with the written description requirement of 35 U.S.C. § 112, first paragraph. Specifically, it has been asserted that the recitation of a substrate with opposite first and second surfaces and “an aperture that communicates with the first surface and extends partially through the substrate” is not supported by the specification of the above-referenced application.

It is respectfully submitted that this recitation is, in fact, supported by the specification of the above-referenced application. Specifically, FIGs. 6A-6E and Figs. 7A and 7B of the as-filed application illustrate such an aperture, and paragraphs [0044] through [0054] and [0056] of the as-file specification describe such an aperture.

Thus, the specification of the above-referenced application provides adequate support for the aperture recited in independent claim 25. Claims 26-32 were rejected merely for depending

from independent claim 25. Accordingly, withdrawal of the 35 U.S.C. § 112, first paragraph, rejections of claims 25-32 is respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 25-29, 31, and 32 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter which is purportedly anticipated by the subject matter described in U.S. Patent 6,498,381 to Halahan et al. (hereinafter “Halahan”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 25 is directed to an intermediate semiconductor device component. The intermediate semiconductor device component of independent claim 25 includes a substrate and at least one via extending into a surface of the substrate, but terminating short of the opposite surface of the substrate. The at least one via includes a seed layer at least partially over an aperture in the substrate, an annular conductive layer contacting the seed layer, and a filler material circumscribed by and contacting the annular conductive layer.

One of ordinary skill in the art would readily understand that the term “seed layer,” as used in independent claim 25, refers to a layer of seed material for the annular conductive layer recited in independent claim 25 and, therefore, that the seed layer would not include a dielectric, or electrically insulative, material.

Halahan describes an intermediate semiconductor device component that includes a via that extends only partially into a substrate. That via lacks the seed material layer recited in amended independent claim 25, however. Instead of contacting a seed material layer, the conductive layer 320 of the via of Halahan is positioned between and contacts an insulator layer 310 and a filler 340. *See* FIGS. 1-5; col. 3, lines 40-44. Again, one of ordinary skill in the art would not consider a dielectric material, such as that of the insulator layer 310 of Halahan, to comprise a seed layer for the conductive layer 320. As such, it is apparent that Halahan does not

expressly or inherently describe an intermediate semiconductor component including a via with an annular conductive layer that contacts a seed layer. As such, Halahan does not anticipate each and every element of amended independent claim 25, as would be required to maintain the 35 U.S.C. § 102(e) rejection of that claim.

Claims 26-29, 31, and 32 are each allowable, among other reasons for depending directly or indirectly from claim 25, which is allowable.

Claim 26 is additionally allowable as Halahan neither expressly nor inherently describes an intermediate semiconductor component with a via including a metal layer formed on a seed layer.

Withdrawal of the 35 U.S.C. § 102(e) rejections of claims 25-29, 31, and 32 is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 30 and 64-66 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Halahan in View of Bhatt

Claim 30 has been rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the teachings of Halahan, in view of the subject matter taught in U.S. Patent 6,418,616 to Bhatt et al. (hereinafter "Bhatt").

Claim 30 is allowable, among other reasons, for depending indirectly from claim 25, which is allowable.

Halahan in View of Farnworth

Claims 64-66 are rejected under 35 U.S.C. § 103(a) for being drawn to subject matter that is allegedly not patentable over the subject matter taught in Halahan, in view of teachings from U.S. Patent 6,620,731 to Farnworth et al. (hereinafter “Farnworth”).

Independent claim 64, as amended and presented herein, is drawn to an intermediate semiconductor component that includes a substrate and at least one via extending into a surface of the substrate and terminating short of an opposite surface of the substrate. The at least one via includes solder that protrudes from the surface into which the at least one via extends.

As noted at page 6 of the final Office Action, Halahan lacks any teaching or suggestion of a solder alloy that protrudes from a surface of a substrate. While Farnworth teaches conductive vias that are formed with solder, Farnworth, like Halahan, lacks any teaching or suggestion as to the manner in which solder may be used to form a via or fill a void within a via that extends only partially into a substrate. More specifically, neither Halahan nor Farnworth provides any teaching or suggestion on the manner in which solder may be introduced into and fill a blind hole. As noted at page 6 of the Office Action, Farnworth teaches that the solder has to be drawn into holes that extend completely through a substrate. Neither Halahan nor Farnworth provides any teaching or suggestion as to the manner in which solder could be drawn into a blind via. Therefore, it is respectfully submitted that one of ordinary skill in the art would have no reason to expect that the purported combination of teachings from these references would be successful.

Moreover, it is respectfully submitted that, without the benefit of hindsight, one of ordinary skill in the art would not have been motivated to combine teachings from Halahan and Farnworth in the manner that has been asserted, as there is no teaching or suggestion in either of these references that would have provided one of ordinary skill in the art with any motivation to combine their teachings in such a way as to develop the structures recited in claims 64-66.

In view of the foregoing, it is respectfully submitted that a *prima facie* case of obviousness has not been established against independent claim 64 or claims 65 or 66 depending

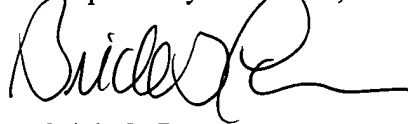
therefrom. As such, claims 64-66 are drawn to subject matter that, under 35 U.S.C. § 103(a), is allowable over the subject matter taught in Halahan and Farnworth.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 30 and 64-66 is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 25-32 and 34-66 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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